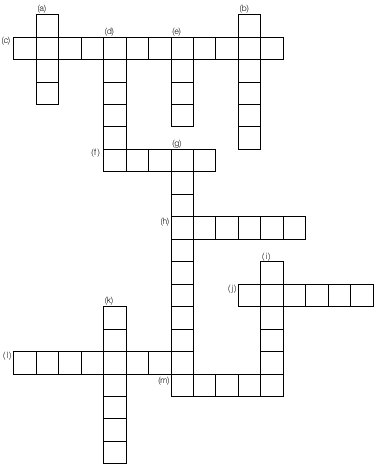
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| **TOPICS 1-2** | Topics 1-2 Test | **BLM 4-12** |
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# Puzzle

1. Complete the following crossword puzzle using the clues provided.



**Key Words for questions 1-8. One term will be used twice**

**Across**

(c) Structures can be classified as \_\_\_\_\_ or

natural.

(f) \_\_\_\_\_\_\_\_\_ structures can support loads

without a frame or a solid mass of

material inside.

(h) The \_\_\_\_\_\_\_ on the Taj Mahal are shell

and frame structures.

(j) If a dam is not heavy enough, the

\_\_\_\_\_\_\_\_\_\_ of water may cause it to be

pushed away.

(i) A structure’s purpose is called its

\_\_\_\_\_\_\_\_\_\_\_.

1. Uneven cooling can cause \_\_\_\_\_\_\_\_\_ to

crack.

**Down**

(a) \_\_\_\_\_\_\_\_\_\_ is built by piling up

materials.

(b) A mass structure is held in place by its

\_\_\_\_\_\_\_\_\_\_.

(d) \_\_\_\_\_\_\_\_\_\_ are structures that have a

skeleton of material and empty space

inside.

1. Shell structures usually have \_\_\_\_\_\_\_\_

walls.

(g) \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_ walls hold up

the roofs of frame structures.

(i) Frame structures are weakest at the

\_\_\_\_\_\_\_\_\_\_.

(k) A turtle’s shell is a \_\_\_\_\_\_\_\_ structure.

***Structures composite***

*Function laminated*

***Forces thin***

***domes adhesives***

***Natural welding***

***Manufactured soldering***

***Mass glass***

***Frames load bearing***

***Shell weight***

***Design simple***

***Aesthetics margin of safety***

***Joints hole***

***Properties layered***

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1. (a) Identify each object as a mass (M), shell (S), or frame (F) structure.

pop can pencil case

chair CD cassette holder

house automobile

CN Tower juice box

human body tent

igloo hydroelectric transmission tower

balloon light bulb

cardboard box car tire  
 Great Wall of China chocolate bar

baseball basketball

**Fill in the Blanks**

Complete each sentence with the correct term.

1. An important function of any structure is to support its own \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Most designers try to keep their designs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. Layers of material that are pressed or glued together are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. Concrete poured around steel bars forms a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ material.
5. A Tetrapak™ juice container is an example of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ material.
6. Things that are joined together by fasteners, such as nails, staples, bolts, and screws, are weakened by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ needed to make them work.

**True and false**

9. All structures can be classified as being either natural or manufactured.

A) True

B) False

10. One very important function of any structure is to support its own weight.

A) True

B) False

11. Complicated designs are necessary to create structures that function well.

A) True

###### B) False

12. Rigid joints are used in a structure to allow joined materials to move easily.

A) True

B) False

13. Chemist Spence Silver was successful in developing a super powerful glue.

A) True

B) False

14. A dovetail joint is an example of materials being held together using interlocking shapes.

A) True

B) False

15. Any materials can be fastened together using welding, brazing, or soldering techniques.

A) True

B) False

**Match the Top columns to the responses in the bottom column**

16. Terms about Structures

a) load

b) design

c) function

d) natural structure

e) manufactured structure

\*

\_\_\_\_\_ a structure that is constructed by humans

\_\_\_\_\_ the manner in which a structure is put together

\_\_\_\_\_ the weight supported by a structure

\_\_\_\_\_ the purpose of a structure

\_\_\_\_\_ a structure that is not made by humans

**17. Methods of Joining Materials**

a) carefully shaped parts that hold themselves together

b) thread, string, or rope inserted in holes in materials to fasten the materials together

c) metal pieces that are melted and fused together

d) sticky substances that flow into tiny cracks on the surface of materials to bind the surfaces together

e) process of joining two shapes by using a melted substance that binds the shapes as the substance cools

\*

\_\_\_\_\_ welding

\_\_\_\_\_ brazing and soldering

\_\_\_\_\_ interlocking shapes

\_\_\_\_\_ ties

\_\_\_\_\_ adhesives

###### **18. Elements of Design**

a) the weight carried or supported by a structure

b) the purpose for which a structure is designed

c) the study of beauty and art in nature

d) layers of material glued together

e) constructed with a thin, carefully shaped covering

\*

\_\_\_\_\_ load

\_\_\_\_\_ shell structure

\_\_\_\_\_ function

\_\_\_\_\_ aesthetics

\_\_\_\_\_ lamination

**Short Answer**

Answer the following questions in the space provided.

1. Why is a basketball not constructed as a mass structure?

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1. What problems would you have if your home were built as a mass structure?

1. Define criteria or specifications, and give an example.

1. How do plywood laminations increase the strength of plywood?

1. List one place where it is essential to have  
   (a) a mobile joint   
   (b) a rigid joint
2. Name two types of adhesives.

1. How do welding, brazing, and soldering fasten materials together?

1. Give two examples of interlocking shapes.

1. Give three examples of ties used to hold materials together.